

WHAT IS CLAIMED IS:

1. An over-coating agent for forming fine patterns which is applied to cover a substrate having photoresist patterns thereon and allowed to shrink under heat so that the spacing between adjacent photoresist patterns is lessened, with the applied film of the over-coating agent being removed substantially completely to form fine patterns, further characterized by containing a water-soluble polymer and a water-soluble fluorine compound.
2. The over-coating agent for forming fine patterns according to claim 1, wherein the water-soluble fluorine compound is at least one member of the group consisting of fluoroalkyl alcohols and fluoroalkyl carboxylic acids.
3. The over-coating agent for forming fine patterns according to claim 1, wherein the water-soluble fluorine compound is at least one of fluoroalkyl alcohols having no more than 6 carbon atoms.
4. The over-coating agent for forming fine patterns according to claim 1, which contains 0.1 - 30 mass% of the water-soluble fluorine compound in the over-coating agent (as solids).
5. The over-coating agent for forming fine patterns according to claim 1, wherein the water-soluble polymer is at least one member of the group consisting of alkylene glycolic polymers, cellulosic derivatives, vinyl polymers, acrylic polymers, urea polymers, epoxy polymers, melamine polymers and amide polymers.

6. The over-coating agent for forming fine patterns according to claim 1, wherein the water-soluble polymer is at least one member of the group consisting of alkylene glycolic polymers, cellulosic derivatives, vinyl polymers and acrylic polymers.

5 7. The over-coating agent for forming fine patterns according to claim 1, which is an aqueous solution having a concentration of 3 - 50 mass%.

8. A method of forming fine patterns comprising the steps 10 of covering a substrate having thereon photoresist patterns with the over-coating agent for forming fine patterns of claim 1, then applying heat treatment to shrink the applied over-coating agent under the action of heat so that the spacing between adjacent photoresist patterns is lessened, and 15 subsequently removing the applied film of the over-coating agent substantially completely.

9. The method of forming fine patterns according to claim 8, wherein the heat treatment is performed by heating the 20 substrate at a temperature that does not cause thermal fluidizing of the photoresist patterns on the substrate.